

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Preliminary Matters

Pursuant to the substitute Power of Attorney filed with the response dated September 20, 2006, please change the attorney docket number to 09428/113002 and send future communications to the address associated with customer number 55346.

Disposition of Claims

Claims 1-36 are pending in this application. Claims 1 and 19 are independent claims.

Claims 2-18 depend, directly or indirectly, from claim 1 and claims 20-36 depend, directly or indirectly, from claim 19.

Claim Amendments

Claims 13 and 31 have been amended to correct informalities. No new matter is introduced by this amendment. These amendments do not affect the substance of the claims, and, therefore, no new search is necessary. Entry of these amendments is respectfully requested.

Objections to the drawings

Paragraphs 51 and 59 of the published version of the specification have been amended, as outlined above. Accordingly, withdrawal of this objection is respectfully requested.

Rejections under 35 U.S.C. §112, first paragraph

Claims 13 and 31 were rejected under 35 U.S.C. 112, 2nd paragraph as being indefinite. The indefinite nature of the claims and their subsequent interpretation was due to insufficient antecedent basis. This has been corrected by way of amendments to these claims. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C. §102(b)

Claims 1-8, 11-12, 19-26, 29-30 were rejected under 35 U.S.C. §102(b) as being anticipated by Plumb et al., U.S. Patent No. 6,078,867. For the reasons set forth below, this rejection is respectfully traversed.

Independent claims 1 and 19 recite displaying a plurality of well bore measurement data as a *plurality* of layers overlaying the borehole model. In accordance with one embodiment of the claimed invention shown in Figure 3, the first layer **304** and the second layer **306** are provided. The first layer **304** has a diameter **d1**, and the second layer **306** has a diameter **d2**. In this embodiment, both layers are concentrically disposed about the borehole. Further, in accordance with another embodiment shown Figure 11, multiple layers may be simultaneously displayed.

Given the plurality of layers overlaying a borehole model, the claimed invention may be able to provide three-dimensional information at different depths of investigation (DOI), *i.e.*, various radial depths from the borehole wall into the formation. Three-dimensional images at

different DOI may provide better information regarding drilling fluid, fines invasion into the formation, the formation surrounding the borehole, etc.

Plumb is directed to a system for generating an oriented three-dimensional graphical representation of a borehole. However, Plumb discloses projecting the data only as a *single* layer on the borehole surface model, not as multiple layers as presented in the claimed invention. Such difference results partly from Plumb's objective to generate a 3D representation *only* for a borehole.

Referring to Figure 3 of Plumb, the ellipse **100** approximates the trajectory of a borehole (col. 4, lines 27-30). The ellipse **100** is approximated by a polygon connecting adjacent vertices (node points) **105** (col. 4, lines 36-38). A quadrangle mesh approximating the shape of the borehole, as shown in Figure 4, is made by vertically collecting ellipses and connecting vertices of adjacent ellipses (col. 4, lines 40-44). As a result, one layer model presenting the borehole surface is generated, as illustrated in Figure 4. Plumb fails to disclose a *plurality* of layers overlaying the borehole model and, therefore, is unable to provide three-dimensional information at different DOI.

In regard to Plumb, the Examiner asserts on pages 9-10 of the Office Action dated November 21, 2006 that since the ellipses are stacked, the display of two layers at two diameters are created. However, as can be clearly seen in Figures 3 and 4 of Plumb, the ellipse **100** is approximated as a polygon that is made by connecting nodes **105**, and a mesh model is made by vertically stacking multiple ellipses and connecting the nodes of the multiple ellipses. The resultant mesh model has one layer approximating a borehole itself, as can be seen in Figure 4. There is not shown a two-layer mesh model anywhere in Plumb.

To anticipate a claim, the cited reference must teach each and every limitation of the claim. Because Plumb et al. fails to teach or suggest at least one limitation of claims 1 and 19 (i.e., *displaying the plurality of measurement data as a plurality of layers overlaying the borehole model*), claims 1 and 19 are patentable over Plumb et al. Dependent claims 2-8, 11-12, 20-26 and 29-30 should also be patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C. §103

Claims 9, 10, 27, and 28

Claims 9, 10, 27, and 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Plumb et al. in view of Austin, “Application of 3D Visualization Software to Reservoir Simulation Post-Processing,” SPE 24433, 1992. This rejection is respectfully traversed.

Claims 9-10 and 27-28 depend from claims 1 and 19. As noted above, Plumb et al. fails to teach or suggest at least one limitation of claims 1 and 19 (i.e., *displaying the plurality of measurement data as a plurality of layers overlaying the borehole model*). Austin does not teach or suggest that which Plumb et al. lacks, as evidenced by the fact that the Examiner relied upon Austin for the teaching of displaying a measurement value associated with a cursor location. (Office Action, p. 6, paragraphs 22-23).

Therefore, Plumb et al. and Austin, whether considered separately or in combination, cannot teach or suggest each and every limitation of independent claims 1 and 19. Thus, claims 1 and 19 are patentable over Plumb et al. in view of Austin. Dependent claims 9, 10, 27, and 28 should also be patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 13-15 and 31-33

Claims 13-15 and 31-33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Plumb et al. in view of Rice, U.S. Patent No. 4,467,461. This rejection is respectfully traversed.

Claims 13-15 and 31-33 depend from claims 1 and 19. As noted above, Plumb et al. fails to teach or suggest at least one limitation of claims 1 and 19 (i.e., *displaying the plurality of measurement data as a plurality of layers overlaying the borehole model*). Rice does not teach or suggest that which Plumb et al. lacks, as evidenced by the fact that the Examiner relied upon Rice for the teaching of 3D cut or cross-sections. (Office Action, p. 7, paragraph 29).

Therefore, Plumb et al. and Rice, whether considered separately or in combination, cannot teach or suggest each and every limitation of independent claims 1 and 19. Thus, claims 1 and 19 are patentable over Plumb et al. in view of Austin. Dependent claims 13-15, and 31-33 should also be patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 16-18 and 34-36

Claims 16-18 and 34-36 were rejected under 35 U.S.C. §103(a) as being unpatentable over Plumb et al. in view of Bryant et al. "Reservoir Description for Optimal Placement of Horizontal Wells", SPE 35521, 1996. This rejection is respectfully traversed.

Claims 16-18 and 34-36 depend from claims 1 and 19. As noted above, Plumb et al. fails to teach or suggest at least one limitation of claims 1 and 19 (i.e., *displaying the plurality of measurement data as a plurality of layers overlaying the borehole model*). The Bryant et al.

paper does not teach or suggest that which Plumb et al. lacks, as evidenced by the fact that the Examiner relied upon the Bryant et al. paper for the teaching of displaying dip planes. (Office Action, p. 8, paragraph 35).

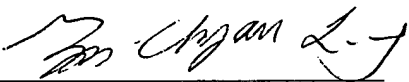
Therefore, Plumb et al. and Bryant et al., whether considered separately or in combination, cannot teach or suggest each and every limitation of independent claims 1 and 19. Thus, claims 1 and 19 are patentable over Plumb et al. in view of Austin. Dependent claims 16-18, and 34-36 should also be patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 09428/113002).

Dated: January 19, 2007

Respectfully submitted,

By 
T. Chyau Liang, Ph.D.
Registration No.: 48,885
OSHA · LIANG LLP
1221 McKinney St., Suite 2800
Houston, Texas 77010
(713) 228-8600
(713) 228-8778 (Fax)
Attorney for Applicant